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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

DATE: **19 January 2010**

SUBJECT: **Thifensulfuron Methyl. Acute and Chronic Aggregate Dietary (Food and Drinking Water) Exposure and Risk Assessments for the Section 3 Registration Action Associated with Food/Feed Use of the Herbicide on Safflower.**

PC Code: 128845
Decision Number: 405073
Petition Number: 9F7523
Risk Assessment Type: Single Chemical, Aggregate
TXR Number: NA
MRID Number: 47641801
Chemical Class: Triazinylsulfonylurea Herbicide

DP Barcode: D369038
Registration Number: 352-633
Regulatory Action: Amended Section 3
Case Number: NA
CAS Number: 79277-27-3
40CFR: §180.439
Trade Name: DuPont™ Harmony® SG

REVIEWER: William T. Drew, Chemist
Risk Assessment Branch 2 (RAB2)
Health Effects Division (HED), 7509P

THROUGH: Debra Rate, PhD, Biologist
Thurston Morton, Chemist
Dietary Exposure Science Advisory Council (DESAC)
HED, 7509P
and
Michael Doherty, PhD, Senior Scientist R. Loranger for
RAB2/HED, 7509P

TO: William T. Drew, Chemist and Risk Assessor
RAB2/HED, 7509P
and
Barbara Madden, RM Team 5
Risk Integration, Minor Use and Emergency Response Branch (RIMUERB)
Registration Division (RD), 7505P

Rec'd in RR 2/4/20

Executive Summary

Acute and chronic aggregate dietary (food and drinking water) exposure and risk assessments were conducted using the *Dietary Exposure Evaluation Model* software with the *Food Commodity Intake Database* (DEEM-FCID™), Version 2.03, which uses food consumption data from the US Department of Agriculture's *Continuing Surveys of Food Intakes by Individuals* (CSFII), collected from 1994 to 1996, and 1998. These analyses were performed to support the Section 3 request for thifensulfuron methyl use on safflower in North Dakota, South Dakota, Nebraska, Montana (East of Route 87 or East of I-15), and Wyoming (East of I-25 or North of I-90). All registered, pending and proposed uses of thifensulfuron methyl, as of the date of this memorandum, are included in these assessments.

According to *OPPTS Residue Chemistry Test Guideline 860.1000*, Table 1 Feedstuffs (June 2008), safflower meal is the only animal feedstuff associated with the current petition. Safflower meal may constitute up to 5% of beef cattle diet, 10% of dairy cattle diet, 25% of poultry diet, and 5% of swine diet. In consideration of the proposed regional use of thifensulfuron methyl on safflower, and the observed residues of <0.050 ppm in safflower meal, the potential contribution to the maximum reasonably balanced dietary burdens of livestock is negligible.

Tolerances have been established for thifensulfuron methyl (40CFR §180.439[a]) in canola, flax, cotton, soybean, and cereal grain commodities. The residue of concern (ROC), for both tolerance enforcement and risk assessment, is the parent compound, thifensulfuron methyl. Both the acute and chronic assessments are highly conservative, and assume 100% crop treated (%CT), along with tolerance-level residues for all agricultural commodities. The default processing factor from DEEM 7.81 was used for corn syrup in the analyses.

Based on these highly conservative assumptions, the acute dietary risk estimate, at the 95th percentile of exposure, is less than 1% of the acute population-adjusted dose (aPAD) for the population subgroup, females 13-49. This is the only subgroup for which an acute dietary endpoint was identified.

Chronic dietary risk estimates are less than or equal to 1% of the chronic population-adjusted dose (cPAD) for all population subgroups. Children 3 to 5 years of age are the most highly-exposed subgroup, utilizing 1% of the cPAD, while the general US population also utilizes 1% of the cPAD. Generally, the Agency is concerned when risk estimates exceed 100% of the PAD; therefore, all acute and chronic dietary risk estimates are below HED's level of concern (LOC).

Thifensulfuron methyl has been classified by the Cancer Assessment Review Committee (CARC) as "not likely to be a human carcinogen." Therefore, cancer risk is not of concern.

1. Introduction

Dietary risk assessment incorporates both exposure and toxicity of a given pesticide. For acute and chronic assessments, the risk is expressed as a percentage of a maximum acceptable dose (the dose which HED has concluded will result in no unreasonable adverse health effects).

This dose is referred to as the population-adjusted dose (PAD). The PAD is equivalent to the point of departure (POD), such as the NOAEL or LOAEL, divided by the requisite uncertainty and/or safety factors.

For acute and non-cancer chronic exposures, HED is concerned when estimated dietary risk exceeds 100% of the PAD. References which discuss the acute and chronic risk assessments in more detail are available on the EPA pesticides web site, *Available Information on Assessing Exposure from Pesticides, A User's Guide* (21 June 2000), which can be accessed via the web link http://www.epa.gov/fedrgstr/EPA-PEST/2000/July/Day-12/6061.pdf (or see SOP 99.6, dated 20 August 1999).

The most recent dietary risk assessment for thifensulfuron methyl was conducted by Douglas Dotson (D332686; 12 December 2006). That assessment appended the previous assessment to include residue estimates in rice and sorghum, supporting the establishment of permanent tolerances for thifensulfuron methyl in the raw agricultural commodities (RACs), and their associated commodities. This current document includes residue estimates in safflower oil, supporting the requested Section 3 registration of thifensulfuron methyl for use on safflower in North Dakota, South Dakota, Nebraska, Montana (East of Route 87 or East of I-15), and Wyoming (East of I-25 or North of I-90).

2. Residue Information

The Interregional Research Project Number 4 (IR-4), has submitted a tolerance petition, 9F7523, proposing the establishment of a tolerance for residues of the herbicide, thifensulfuron methyl, in or on safflower seeds (RAC) at 0.05 ppm. Permanent tolerances have been established for thifensulfuron methyl (40CFR §180.439[a]) in cereal grains (barley, field corn, oat, rice, sorghum, triticale and wheat), canola, cotton, flax and soybeans. The ROC, for both tolerance enforcement and risk assessment, is the parent compound, thifensulfuron methyl. Both the acute and chronic assessments are highly conservative, and assume 100%CT, along with tolerance-level residues for all agricultural commodities. The default processing factor from DEEM 7.81 was used for corn syrup in the analyses.

The lowest limit of method validation (LLMV) was 0.050 ppm in safflower seeds, meal and refined oil. Thifensulfuron methyl residues were <LLMV in all samples from both the field trial and processing studies. Because thifensulfuron methyl does not concentrate in safflower oil, the RAC tolerance (0.05 ppm) was entered into the acute and chronic DEEM input files for safflower oil (and safflower oil - baby food). In consideration of the proposed regional use of thifensulfuron methyl on safflower, and the observed residues of <0.050 ppm in safflower meal, the potential contribution to the maximum reasonably balanced dietary burdens of livestock is negligible.

3. Drinking Water Data

The thifensulfuron methyl drinking water residues used in these dietary risk assessments were provided in Drinking Water Assessments (DWAs) by the Environmental Fate and Effects Division (EFED), and incorporated directly into the dietary assessments. Water residues were incorporated in DEEM-FCID™ via entry into the food categories "water, direct, all sources" and "water, indirect, all sources."

The highest estimated drinking water concentration (EDWC) for acute scenarios was in surface water, at 0.0044 ppm. This concentration was derived via utilization of the *FQPA Index Reservoir Screening Tool* (FIRST) model (D363089; Andrew Shelby and Nelson Thurman; 29 September 2009). The highest EDWC for chronic scenarios was also in surface water, at 0.0015 ppm. This concentration was also obtained by utilizing the FIRST model (D332797; James Breithaupt; 26 October 2006).

In order to be more conservative, the highest of the acute, and the highest of the chronic EDWCs (among all the various acute and chronic scenarios modeled) were taken from EFED's two most recent DWAs. The acute and chronic EDWCs used in the respective dietary analyses are shown in Tables 1 and 2 (below), respectively, along with the other scenarios assessed by EFED.

TABLE 1 Maximum EDWCs for Drinking Water Risk Assessment, Based upon Ground Application of Thifensulfuron Methyl.*

Drinking Water Source [Model Used]	Use [Rate Modeled]	Scenario	Maximum EDWC (ppb)
Groundwater [SCIGROW]	Safflower [0.0188 lbs ai/A]	Acute and Chronic	0.0326
	Barley, fallow [0.056 lbs ai/A]	Acute and Chronic	0.0972
Surface water [FIRST]	Safflower [0.0188 lbs ai/A]	Acute	1.656
		Chronic	0.336
	Barley, fallow [0.056 lbs ai/A]	**Acute**	**4.429**
		Chronic	0.900

* D363089; Andrew Shelby and Nelson Thurman; 29 September 2009.

TABLE 2 Maximum EDWCs for Drinking Water Risk Assessment, Based upon Aerial Application of Thifensulfuron Methyl.*

Drinking Water Source [Model Used]	Use [Rate Modeled]	Scenario	Maximum EDWC (ppb)
Surface water [FIRST]	Soybean [0.032 lbs ai/A]	Acute	3.9
		Chronic	**1.5**

* D332797; James Breithaupt; 26 October 2006.

The various models used by EFED in conducting DWAs, and their descriptions, are available at the EPA website via the web link, http://www.epa.gov/oppefed1/models/water/. No surface or ground water monitoring data were available for thifensulfuron methyl.

4. DEEM-FCID™ Program and Consumption Information

Thifensulfuron methyl acute and chronic dietary exposure assessments were conducted using DEEM-FCID™ (Version 2.03), which incorporates consumption data from USDA's CSFII, 1994 to 1996, and 1998. The 1994-96, 1998 data are based on the reported consumption of more than 20,000 individuals over two non-consecutive survey days. Foods "as consumed" (such as apple pie) are linked to EPA-defined food commodities (such as apples, peeled fruit - cooked, fresh/unspecified, or baked; or wheat flour - cooked, fresh/unspecified, or baked) using publicly available recipe translation files developed jointly by USDA/ARS and EPA. For chronic exposure assessment, consumption data are averaged for the entire US population, and within population subgroups, but for acute exposure assessment, they are retained as individual consumption events (which is why it is appropriate to add residue values together for the acute assessment, while separate exposure estimates are summed for the chronic assessment). Based on analysis of the 1994-96, 1998 CSFII consumption data, which took into account dietary patterns and survey respondents, HED concluded that it is most appropriate to report risk for the following population subgroups: the general US population, all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, adults 20-49, females 13-49, and adults 50+ years old.

For chronic dietary exposure assessment, an estimate of the residue level in each food or food-form (such as orange or orange juice) on the food commodity residue list is multiplied by the average daily consumption estimate for that food/food form. The resulting residue consumption estimate for each food/food form is summed with the residue consumption estimates for all other food/food forms on the commodity residue list to arrive at the total average estimated exposure. Exposure is expressed in mg/kg body weight/day, and as a percent of the cPAD. This procedure is performed for each population subgroup.

For acute exposure assessments, individual one-day food consumption data are used on an individual-by-individual basis. The reported consumption amounts of each food item can be multiplied by a residue point estimate, and summed to obtain a total daily pesticide exposure for a deterministic exposure assessment, or "matched" in multiple random pairings with residue values, and then summed in a probabilistic assessment. The resulting distribution of exposures is expressed as a percentage of the aPAD on both a user (those who reported eating relevant commodities/food forms) and a per-capita (those who reported eating the relevant commodities as well as those who did not) basis. In accordance with HED policy, per capita exposure and risk are reported for all levels of refinement of the analysis. However, for analyses which are largely unrefined, significant differences in user versus per capita exposure and risk are identified, and noted in the risk assessment.

5. Toxicological Information

For detailed information, please refer to the human health risk assessment conducted for thifensulfuron methyl's use on safflower (D361902; William T. Drew; 29 January 2010). The database adequately characterizes thifensulfuron methyl as having low acute oral, dermal and

inhalation toxicity. It has low (Category IV) acute toxicity via the oral route. By inhalation and dermal routes of exposure in the rat, there was relatively low (Category III) acute toxicity. There was moderate eye irritation (Category III), and slight dermal irritation (Category IV). It is not a dermal sensitizer.

The risk assessment team evaluated the toxicology database for thifensulfuron methyl, and selected doses and endpoints for acute and chronic dietary exposure risk assessments. The acute and chronic dietary reference doses and PADs are summarized in Table 3 (below). The risk assessment team also evaluated the potential for increased susceptibility of infants and children from exposure to thifensulfuron methyl. The team concluded that the FQPA Safety Factor should be reduced to 1X, as there are no residual uncertainties for pre- or post-natal toxicity.

Thifensulfuron methyl was classified as not likely to be a human carcinogen, based on the lack of evidence of carcinogenicity in both the rat and the mouse. Therefore, cancer dietary risk is not of concern.

TABLE 3 Summary of Thifensulfuron Methyl Toxicological Doses and Endpoints for Use in Dietary Exposure and Risk Assessments.

Exposure/ Scenario	Point of Departure	Uncertainty/FQPA Safety Factors	LOC for Risk Assessment	Study and Toxicological Effects
Acute dietary (females 13-49 only)	NOAEL = 159 mg/kg/day	UF_A = 10X UF_H = 10X FQPA SF = 1	aRfD = 1.59 mg/kg/day aPAD = 1.59 mg/kg/day	Developmental oral toxicity in rats. LOAEL = 725 mg/kg/day, based on decreased mean body weight, and increased incidence of small renal papillae.
Chronic dietary (all populations)	NOAEL = 4.3 mg/kg/day	UF_A = 10X UF_H = 10X FQPA SF = 1	cRfD = 0.043 mg/kg/day cPAD = 0.043 mg/kg/day	Carcinogenicity oral toxicity in mice. LOAEL = 128 mg/kg/day, based on decreased body weight and body weight gain.
Cancer (oral)	Not likely to be a human carcinogen, based on the lack of evidence of carcinogenicity in rats and mice.			

Point of Departure (POD) = a data point or estimated point derived from observed dose-response data, which is used to mark the beginning of extrapolation to determine risk associated with lower environmentally relevant human exposures. UF = Uncertainty Factor. UF_A = extrapolation from animal to human (interspecies). UF_H = potential variation in sensitivity among members of the human population (intraspecies). UF_{DB} = database uncertainty factor to account for the absence of key data (such as the lack of a critical study). FQPA SF = FQPA Safety Factor. NOAEL = No Observed Adverse Effect Level. LOAEL = Lowest Observed Adverse Effect Level. PAD = Population Adjusted Dose (a = acute, c = chronic). RfD = Reference Dose. MOE = Margin Of Exposure. LOC = Level Of Concern.

6. Results/Discussion

As previously stated, for acute and chronic assessments, HED is concerned when dietary risk exceeds 100% of the PAD. The DEEM-FCID™ analyses estimate the dietary exposure of the US population, and various population subgroups. The results of the acute analysis are summarized in Table 4 (below) for females 13-49, the only subgroup for which an acute dietary

endpoint was identified. As shown in Table 4, the risk estimate associated with acute dietary exposure to thifensulfuron methyl is below HED's LOC. The acute dietary risk estimate at the 95th percentile of exposure is less than 1% of the aPAD for females 13-49.

TABLE 4 Summary of Acute Dietary Exposure and Risk Estimates for Thifensulfuron Methyl.

Population Subgroup [Years of Age]	DEEM Acute Dietary Analysis (95th Percentile)		
	aPAD (mg/kg/day)	Exposure Estimate (mg/kg/day)	% aPAD
General US Population	NA*	NA	NA
All Infants [< 1]			
Children [1-2]			
Children [3-5]			
Children [6-12]			
Youths [13-19]			
Adults [20-49]			
Adults [50+]			
Females [13-49]	1.59	0.000544	<1

* NA = Not Applicable.

The results of the chronic analysis are summarized in Table 5 (below) for the general US population, all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, females 13-49, adults 20-49, and adults 50+ years. Chronic dietary risk estimates are less than or equal to 1% of the cPAD for all population subgroups, as shown in Table 5. Children 3 to 5 years of age are the most highly-exposed subgroup.

TABLE 5 Summary of Chronic Dietary Exposure and Risk Estimates for Thifensulfuron Methyl.

Population Subgroup* [Years of Age]	DEEM Chronic Dietary Analysis		
	cPAD (mg/kg/day)	Exposure Estimate (mg/kg/day)	% cPAD
General US Population	0.043	0.000284	1
All Infants [<1]		0.000487	1
Children [1-2]		0.000602	1
Children [3-5]		**0.000621**	**1**
Children [6-12]		0.000447	1
Youth [13-19]		0.000310	1
Adults [20-49]		0.000239	1
Adults [50+]		0.000175	<1
Females [13-49]		0.000226	1

* Values for the population subgroup with the highest risk are in **bold** type.

All acute and chronic dietary risk estimates are below HED's LOC.

7. Characterization of Inputs/Outputs

This assessment is based on tolerance-level residues in all agricultural commodities, and assumes that all crops with existing or proposed tolerances are treated (100%CT). These assumptions result in highly conservative, health-protective estimates of dietary exposure and risk.

8. Conclusions

There are no dietary exposure considerations that would preclude the establishment of a permanent tolerance for residues of thifensulfuron methyl in/on safflower seeds.

9. List of Attachments

Attachment 1. Thifensulfuron Methyl Residues Used for Acute Dietary Exposure Estimates.
Attachment 2. Summary of the Acute Dietary Exposure and Risk Estimates for Thifensulfuron Methyl.
Attachment 3. Thifensulfuron Methyl Residues Used for Chronic Dietary Exposure Estimates.
Attachment 4. Summary of the Chronic Dietary Exposure and Risk Estimates for Thifensulfuron Methyl.

Attachment 1. Thifensulfuron Methyl Residues Used for Acute Dietary Exposure Estimates.

Filename: C:\Documents and Settings\wdrew\My Documents\ThifensulfuronMethylDEEM102809AcuteInput.R98
Chemical: Thifensulfuron methyl
RfD(Chronic): .043 mg/kg bw/day NOEL(Chronic): 4.3 mg/kg bw/day
RfD(Acute): 1.59 mg/kg bw/day NOEL(Acute): 159 mg/kg bw/day
Date created/last modified: 10-23-2009/14:00:23/8 Program ver. 2.03

EPA Code	Crop Grp	Commodity Name	Def Res (ppm)	Adj.Factors #1	#2	Comment
15000250	15	Barley, pearled barley	0.050000	1.000	1.000	
15000251	15	Barley, pearled barley-babyfood	0.050000	1.000	1.000	
15000260	15	Barley, flour	0.050000	1.000	1.000	
15000261	15	Barley, flour-babyfood	0.050000	1.000	1.000	
15000270	15	Barley, bran	0.050000	1.000	1.000	
15001200	15	Corn, field, flour	0.050000	1.000	1.000	
15001201	15	Corn, field, flour-babyfood	0.050000	1.000	1.000	
15001210	15	Corn, field, meal	0.050000	1.000	1.000	
15001211	15	Corn, field, meal-babyfood	0.050000	1.000	1.000	
15001220	15	Corn, field, bran	0.050000	1.000	1.000	
15001230	15	Corn, field, starch	0.050000	1.000	1.000	
15001231	15	Corn, field, starch-babyfood	0.050000	1.000	1.000	
15001240	15	Corn, field, syrup	0.050000	1.500	1.000	
15001241	15	Corn, field, syrup-babyfood	0.050000	1.500	1.000	
15001250	15	Corn, field, oil	0.050000	1.000	1.000	
15001251	15	Corn, field, oil-babyfood	0.050000	1.000	1.000	
95001280	O	Cottonseed, oil	0.020000	1.000	1.000	
95001281	O	Cottonseed, oil-babyfood	0.020000	1.000	1.000	
20001630	20	Flaxseed, oil	0.020000	1.000	1.000	
15002310	15	Oat, bran	0.050000	1.000	1.000	
15002320	15	Oat, flour	0.050000	1.000	1.000	
15002321	15	Oat, flour-babyfood	0.050000	1.000	1.000	
15002330	15	Oat, groats/rolled oats	0.050000	1.000	1.000	
15002331	15	Oat, groats/rolled oats-babyfood	0.050000	1.000	1.000	
20003190	20	Rapeseed, oil	0.020000	1.000	1.000	
20003191	20	Rapeseed, oil-babyfood	0.020000	1.000	1.000	
15003230	15	Rice, white	0.050000	1.000	1.000	
15003231	15	Rice, white-babyfood	0.050000	1.000	1.000	
15003240	15	Rice, brown	0.050000	1.000	1.000	
15003241	15	Rice, brown-babyfood	0.050000	1.000	1.000	
15003250	15	Rice, flour	0.050000	1.000	1.000	
15003251	15	Rice, flour-babyfood	0.050000	1.000	1.000	
15003260	15	Rice, bran	0.050000	1.000	1.000	
15003261	15	Rice, bran-babyfood	0.050000	1.000	1.000	
20003300	20	Safflower, oil	0.050000	1.000	1.000	
20003301	20	Safflower, oil-babyfood	0.050000	1.000	1.000	
15003440	15	Sorghum, grain	0.050000	1.000	1.000	
15003450	15	Sorghum, syrup	0.050000	1.000	1.000	
06003470	6	Soybean, seed	0.100000	1.000	1.000	
06003480	6	Soybean, flour	0.100000	1.000	1.000	
06003481	6	Soybean, flour-babyfood	0.100000	1.000	1.000	
06003490	6	Soybean, soy milk	0.100000	1.000	1.000	
06003491	6	Soybean, soy milk-babyfood or in	0.100000	1.000	1.000	

06003500	6	Soybean, oil	0.100000	1.000	1.000
06003501	6	Soybean, oil-babyfood	0.100000	1.000	1.000
86010000	O	Water, direct, all sources	0.004429	1.000	1.000
86020000	O	Water, indirect, all sources	0.004429	1.000	1.000
15004010	15	Wheat, grain	0.050000	1.000	1.000
15004011	15	Wheat, grain-babyfood	0.050000	1.000	1.000
15004020	15	Wheat, flour	0.050000	1.000	1.000
15004021	15	Wheat, flour-babyfood	0.050000	1.000	1.000
15004030	15	Wheat, germ	0.050000	1.000	1.000
15004040	15	Wheat, bran	0.050000	1.000	1.000
15004050	15	Wild rice	0.050000	1.000	1.000

Attachment 2. Summary of the Acute Dietary Exposure and Risk Estimates for Thifensulfuron Methyl.

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U.S. Environmental Protection Agency                                    Ver. 2.02
DEEM-FCID ACUTE Analysis for THIFENSULFURON METHYL                  (1994-98 data)
Residue file: ThifensulfuronMethylDEEM102809AcuteInput.R98
Adjustment factor #2 NOT used.
Analysis Date: 10-28-2009/14:17:09    Residue file dated: 10-28-2009/14:03:14/8
NOEL (Acute) = 159.000000 mg/kg body-wt/day
Daily totals for food and foodform consumption used.
Run Comment: ""
================================================================================

Summary calculations (per capita):
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95th Percentile			99th Percentile			99.9th Percentile		
Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE
U.S. Population:								
0.000790	0.05	201329	0.001202	0.08	132237	0.002047	0.13	77661
All infants:								
0.001815	0.11	87615	0.002571	0.16	61845	0.003896	0.25	40812
Children 1-2 yrs:								
0.001369	0.09	116148	0.001865	0.12	85250	0.004932	0.31	32238
Children 3-5 yrs:								
0.001265	0.08	125643	0.001766	0.11	90038	0.003927	0.25	40492
Children 6-12 yrs:								
0.000933	0.06	170425	0.001240	0.08	128245	0.002007	0.13	79203
Youth 13-19 yrs:								
0.000703	0.04	226112	0.000948	0.06	167751	0.001585	0.10	100314
Adults 20-49 yrs:								
0.000585	0.04	271798	0.000816	0.05	194939	0.001211	0.08	131305
Adults 50+ yrs:								
0.000427	0.03	372470	0.000564	0.04	282102	0.000898	0.06	176978
Females 13-49 yrs:								
0.000544	0.03	292158	0.000745	0.05	213285	0.001097	0.07	144884

Attachment 3. Thifensulfuron Methyl Residues Used for Chronic Dietary Exposure Estimates.

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Filename: C:\Documents and Settings\wdrew\My
Documents\ThifensulfuronMethylDEEM102309ChronicInput.R98
Chemical: Thifensulfuron methyl
RfD(Chronic): .043 mg/kg bw/day  NOEL(Chronic): 4.3 mg/kg bw/day
RfD(Acute): 1.59 mg/kg bw/day  NOEL(Acute):  159 mg/kg bw/day
Date created/last modified: 10-23-2009/13:57:26/8          Program ver. 2.03
```

EPA Code	Crop Grp	Commodity Name	Def Res (ppm)	Adj.Factors #1	#2	Comment
15000250	15	Barley, pearled barley	0.050000	1.000	1.000	
15000251	15	Barley, pearled barley-babyfood	0.050000	1.000	1.000	
15000260	15	Barley, flour	0.050000	1.000	1.000	
15000261	15	Barley, flour-babyfood	0.050000	1.000	1.000	
15000270	15	Barley, bran	0.050000	1.000	1.000	
15001200	15	Corn, field, flour	0.050000	1.000	1.000	
15001201	15	Corn, field, flour-babyfood	0.050000	1.000	1.000	
15001210	15	Corn, field, meal	0.050000	1.000	1.000	
15001211	15	Corn, field, meal-babyfood	0.050000	1.000	1.000	
15001220	15	Corn, field, bran	0.050000	1.000	1.000	
15001230	15	Corn, field, starch	0.050000	1.000	1.000	
15001231	15	Corn, field, starch-babyfood	0.050000	1.000	1.000	
15001240	15	Corn, field, syrup	0.050000	1.500	1.000	
15001241	15	Corn, field, syrup-babyfood	0.050000	1.500	1.000	
15001250	15	Corn, field, oil	0.050000	1.000	1.000	
15001251	15	Corn, field, oil-babyfood	0.050000	1.000	1.000	
95001280	0	Cottonseed, oil	0.020000	1.000	1.000	
95001281	0	Cottonseed, oil-babyfood	0.020000	1.000	1.000	
20001630	20	Flaxseed, oil	0.020000	1.000	1.000	
15002310	15	Oat, bran	0.050000	1.000	1.000	
15002320	15	Oat, flour	0.050000	1.000	1.000	
15002321	15	Oat, flour-babyfood	0.050000	1.000	1.000	
15002330	15	Oat, groats/rolled oats	0.050000	1.000	1.000	
15002331	15	Oat, groats/rolled oats-babyfood	0.050000	1.000	1.000	
20003190	20	Rapeseed, oil	0.020000	1.000	1.000	
20003191	20	Rapeseed, oil-babyfood	0.020000	1.000	1.000	
15003230	15	Rice, white	0.050000	1.000	1.000	
15003231	15	Rice, white-babyfood	0.050000	1.000	1.000	
15003240	15	Rice, brown	0.050000	1.000	1.000	
15003241	15	Rice, brown-babyfood	0.050000	1.000	1.000	
15003250	15	Rice, flour	0.050000	1.000	1.000	
15003251	15	Rice, flour-babyfood	0.050000	1.000	1.000	
15003260	15	Rice, bran	0.050000	1.000	1.000	
15003261	15	Rice, bran-babyfood	0.050000	1.000	1.000	
20003300	20	Safflower, oil	0.050000	1.000	1.000	
20003301	20	Safflower, oil-babyfood	0.050000	1.000	1.000	
15003440	15	Sorghum, grain	0.050000	1.000	1.000	
15003450	15	Sorghum, syrup	0.050000	1.000	1.000	
06003470	6	Soybean, seed	0.100000	1.000	1.000	
06003480	6	Soybean, flour	0.100000	1.000	1.000	
06003481	6	Soybean, flour-babyfood	0.100000	1.000	1.000	
06003490	6	Soybean, soy milk	0.100000	1.000	1.000	
06003491	6	Soybean, soy milk-babyfood or in	0.100000	1.000	1.000	

06003500	6	Soybean, oil	0.100000	1.000	1.000
06003501	6	Soybean, oil-babyfood	0.100000	1.000	1.000
86010000	O	Water, direct, all sources	0.001500	1.000	1.000
86020000	O	Water, indirect, all sources	0.001500	1.000	1.000
15004010	15	Wheat, grain	0.050000	1.000	1.000
15004011	15	Wheat, grain-babyfood	0.050000	1.000	1.000
15004020	15	Wheat, flour	0.050000	1.000	1.000
15004021	15	Wheat, flour-babyfood	0.050000	1.000	1.000
15004030	15	Wheat, germ	0.050000	1.000	1.000
15004040	15	Wheat, bran	0.050000	1.000	1.000
15004050	15	Wild rice	0.050000	1.000	1.000

Attachment 4. Summary of the Chronic Dietary Exposure and Risk Estimates for Thifensulfuron Methyl.

U.S. Environmental Protection Agency Ver. 2.00
DEEM-FCID Chronic analysis for THIFENSULFURON METHYL (1994-98 data)
Residue file name: C:\Documents and Settings\wdrew\My Documents\ThifensulfuronMethylDEEM102309ChronicInput.R98
Adjustment factor #2 NOT used.
Analysis Date 10-23-2009/14:03:18 Residue file dated: 10-23-2009/13:57:26/8
Reference dose (RfD, Chronic) = .043 mg/kg bw/day

Total exposure by population subgroup

Population Subgroup	Total Exposure mg/kg body wt/day	Total Exposure Percent of Rfd
U.S. Population (total)	**0.000284**	**0.7%**
U.S. Population (spring season)	0.000288	0.7%
U.S. Population (summer season)	0.000288	0.7%
U.S. Population (autumn season)	0.000280	0.7%
U.S. Population (winter season)	0.000281	0.7%
Northeast region	0.000273	0.6%
Midwest region	0.000296	0.7%
Southern region	0.000274	0.6%
Western region	0.000298	0.7%
Hispanics	0.000308	0.7%
Non-hispanic whites	0.000276	0.6%
Non-hispanic blacks	0.000291	0.7%
Non-hisp/non-white/non-black	0.000335	0.8%
All infants (< 1 year)	**0.000487**	**1.1%**
Nursing infants	0.000185	0.4%
Non-nursing infants	0.000602	1.4%
Children 1-6 yrs	0.000602	1.4%
Children 7-12 yrs	0.000429	1.0%
Females 13-19 (not preg or nursing)	0.000270	0.6%
Females 20+ (not preg or nursing)	0.000196	0.5%
Females 13-50 yrs	0.000239	0.6%
Females 13+ (preg/not nursing)	0.000244	0.6%
Females 13+ (nursing)	0.000261	0.6%
Males 13-19 yrs	0.000348	0.8%
Males 20+ yrs	0.000236	0.5%
Seniors 55+	0.000170	0.4%
Children 1-2 yrs	**0.000602**	**1.4%**
Children 3-5 yrs	**0.000621**	**1.4%**
Children 6-12 yrs	**0.000447**	**1.0%**
Youth 13-19 yrs	**0.000310**	**0.7%**
Adults 20-49 yrs	**0.000239**	**0.6%**
Adults 50+ yrs	**0.000175**	**0.4%**
Females 13-49 yrs	**0.000226**	**0.5%**

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R180714

Chemical Name: Thifensulfuron

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